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DISCUSSION PAPER 14

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ABSTRACT

An association between urban location and crime has long been recognized both theoretically and empirically in the literature of criminology. But a number of aspects of this association remain contentious. Alternative theoretical perspectives — urbanization theory, inequality theory, compositional and opportunity theories — for explaining this relationship have been formulated; but few attempts have been made to empirically assess them together. In fact, a good deal of the research on this topic has been somewhat atheoretical and primarily concerned with locating the correlates of urban crime. And most of this literature is specific to the context of the United States.

The present research formulates hypotheses derived from a review of these several theoretical perspectives. These hypotheses are tested with data from cities in Canada with a population of 25,000 and over, using multiple regression techniques. Violent and property crime rates are computed and demographic, social and economic data published by Statistics Canada are used as indicators of the predictor variables. The results provide strong support for opportunity theory. Implications of the findings for the several theoretical perspectives are discussed.

I. INTRODUCTION

An association between urban location and crime has long been recognized both theoretically and empirically in the literature of criminology. Wirth (1938) theorized that normative consensus and primary group controls were undermined by the increasing size, density and heterogeneity characteristics of urban locations. Similarly, Shaw and McKay (1942) hypothesized that social disorganization within urban communities led to a weakening of informal social controls and the development of delinquent subcultures. Empirically, Wilks (1967) has noted that as early as the 1800s it was known that crime was not evenly distributed over all areas of a nation. Nettler (1978) concluded that official statistics for Canada, the United States and Europe revealed a tendency for serious crime to increase with size of city, while Wolfgang (1968) commented that the rate of serious crime appeared to increase with size of community and that differences between the most populated and least populated communities were extremely large.

However, a number of aspects of this association between urban location and crime remain contentious. First of all, alternative theoretical perspectives for explaining this association have been formulated over the years. Prominent among these are inequality theory (Braithwaite, 1979), compositional theory (Gordon, 1976) and opportunity theory (Cohen and Felson, 1979). Furthermore, only a few attempts (Blau and Blau, 1982; Carroll and Jackson, 1983; Laub, 1983) have been made to empirically assess several of these perspectives together. In addition, most of the theoretical and empirical literature is specific to the context of the United States and has not been extended to other settings. Finally, a good deal of the research in this area has been descriptive and lacking in an a priori theoretical focus. Urban crime correlates have sometimes been selected somewhat haphazardly for factor analysis or regression procedures, without sufficient attention to their theoretical significance. And such methodological issues as multicollinearity, optimal cutting points and causal direction have frequently been ignored (Gordon, 1967).

The present research is an attempt to contribute to the literature on this topic through the formulation of hypotheses derived from several theoretical perspectives concerned with urban crime, with the testing of these hypotheses

using data from cities outside the United States. Specifically, we will formulate hypotheses based on a review of urbanization, inequality, compositional and opportunity theories and test them with data drawn from eighty-eight Canadian cities with a population of 25,000 or more.

II. THEORY AND RELATED RESEARCH

Urbanization theory is a specific version of the more general notion that social change is disorganizing and disruptive of social relationships. As developed by Wirth (1938), urbanization—the increased size, density and heterogeneity of a population—results in certain characteristically urban social relations. The concentration of a large and heterogeneous population leads to the weakening of interpersonal ties, primary social relations and normative consensus, with the ultimate consequences of individual alienation, anomie and an increased prevalence of deviant behaviors (Fischer, 1975). Each of the ecological characteristics of urbanization has social structural consequences. "Large size lends an impersonal, anonymous, transitory, and utilitarian flavor to relationships among members of a system. Density demands and facilitates the evolution of specialized and segregated economic and social roles, a complex community structure which demands increased formal coordination and regulation. The heterogeneous population assembled in urban areas share few common understandings, and friction generated in the competitive hubbub of daily life should find outlet in 'aggrandizement and mutual exploitation,' 'nervous tension,' and 'violent collective behavior'" (Skogan, 1977: 36). Therefore, more urbanized locales should exhibit a weakening of informal mechanisms of social control and higher rates of personal disorganization, crime and disorder (Wirth, 1938).

Evidence consistent with urbanization theory can be found in research examining the relationships between crime rates and the size, density and heterogeneity of populations. While a number of criminologists report that serious crime, and in particular property crime, generally increases with city size (Nettler, 1978; Harries, 1974; Wolfgang, 1968; Webb, 1972; Angell, 1974; Danzieger, 1976), the relation between density and crime is more controversial. With areal density as the measure, some report a positive relationship with crime rates (Webb, 1972; Galle et al., 1973; McCarthy et al., 1975; Danzieger and Wheeler, 1975; Danzieger, 1976; Flango and Sherbenou, 1976), while others fail to establish any relation (Marlin, 1973; Spector, 1975). Roncek

(1975) and Kvalseth (1977) have suggested that, although a number of studies have established a simple correlation between areal density and crime, multivariate analysis controlling for city size and socioeconomic status has eliminated any independent effect of areal density on crime. In the United States, heterogeneity has been indexed using a single racial group (proportion black) as well as a combination of minority groups (proportion non-white or proportion foreign born and black). Most research has indicated weak to moderate support for the hypothesis that cities (or states) with greater heterogeneity exhibit higher crime rates (Schuessler, 1962; Schuessler and Slatin, 1964; Eberts and Schwirian, 1968; Angell, 1974; Danzieger, 1976; Harries, 1976; Skogan, 1977). However, the magnitude of this relationship appears to vary depending upon each group's socioeconomic status (Kornhauser, 1978). Also supportive of the ideas behind urbanization theory is the research of Crutchfield et al. (1982) comparing measures of blocked opportunity (unemployment, impoverishment, etc.) with lack of social integration (population size, total mobility). While the former uniquely explained more of the violent crime rate variation, the latter uniquely explained more property crime. These authors interpret mobility as having a contextual effect in weakening relational structures and community controls. However, Skogan (1977) has cautioned that the relationship between crime and size, density and heterogeneity may be a relatively recent phenomenon, at least for the United States's thirty-two largest cities. Furthermore, Lodhi and Tilly (1973) failed to support the urbanization hypothesis with their data from nineteenth century France. They measured urban growth as the rate of change in the proportion of the population living in communes of 10,000 or more, in contrast to the static concept of urbanity measured by the proportion at any given time living in communes of 10,000 or more. Only the latter was found to be significantly related to property crime rates, a finding they interpret as casting doubt on the idea that disruption and stress, brought on by change, result in higher crime. Rather, they suggest that the structure of urban life itself—indexed by urbanity—creates opportunities and incentives for higher crime rates. In any event, it will be important to distinguish between the process and condition of urbanization in examining the alledged criminogenic consequences of population size, density and heterogeneity.

Fischer (1976) has claimed that compositional theory poses the most significant challenge to the Wirthian hypothesis by maintaining that small, primary groups persist undiminished in the city. He pointed out that compositional theory denies that the size, density and heterogeneity of the wider community have any serious, direct consequences for personal social worlds

since the dynamics of social life depend largely on the non-ecological factors of social class, ethnicity and stage in the life cycle. So Gans (1962), for example, argued that many of the assertions about ways of life in cities and suburbs can be analyzed in terms of class and life cycle characteristics and suggested that the unmarried and childless in the central city are detached from the neighborhood (low social integration) because of their life cycle stage. Thus, since urban populations are disproportionately young and childless, the behaviors to which they are especially prone—including crime—will be particularly evident in urban areas (Fischer, 1976). Hence the higher urban crime rate may result from the demographic composition of cities rather than from the alledged breakdown of social relations supposedly brought on by their ecological characteristics. Fischer (1976) concluded that compositional theory maintains that the ecological factors of size, density and heterogeneity have no serious, direct effects; any consequences are indirect, resulting from ways in which they affect positions of individuals in the economic structure, the ethnic mosaic, and the life cycle. However, it is possible to argue that urbanization and at least some compositional characteristics of the population affect crime rates through similar mechanisms. Thus young, unattached males may be less socially integrated (Briar and Piliavin, 1965; Rowe and Tittle, 1977) and therefore less subject to the restraining influence of informal social controls.

Evidence in support of the compositional hypothesis is found in the correlation between age and crime. Relative to their proportion in the population, young people are arrested far more frequently than other age groups (Nettler, 1978). Furthermore, a number of studies have demonstrated the impact of age composition on crime rate trends (Sagi and Wellford, 1968; Wellford, 1973; Flango and Sherbenou, 1976; Lee, 1984). Research by Marlin (1973), McCarthy et al. (1975), Loftin and Hill (1974), Flango and Sherbenou (1976) and Cohen and Felson (1979) reported a positive relation between crime rates and the young, adult proportion of the population, while other researchers (Schuessler, 1962; Danzieger and Wheeler, 1975; Avio and Clark, 1976) found that a young population is related only to certain types of crimes. Schuessler and Slatin (1964) reported the proportion of married males to be significantly (negatively) related to crime rates while the proportion of persons in families was unrelated to crime. Even more direct evidence for the impact of compositional characteristics on urban crime rates can be found in the work of Gordon (1967) and Laub (1983). Gordon (1967), using prevalence rates, has argued that apparent rural-urban differences in crime rates are due to differences in the racial composition of the population residing in these areas. From victimization

data Laub (1983) reported that differences in rates between social statuses for the same location were greater than differences between locations for the same social status, particularly for offenders eighteen years of age or older. "For those offenders eighteen years or older, the urban effect is small in light of the moderate race effect and very strong sex effect" (Laub, 1983:191). In attempting to explain urban crime rates, then, it will be important to evaluate the possible effects of the demographic composition of these urban areas.

Income inequality is a third theoretical perspective that can be applied to the relationship between urban location and crime. However, we need to distinguish between the absolute and relative deprivation varieties of this type of explanation. Absolute deprivation explanations focus upon the criminogenic conditions of life experienced by the poor and oppressed. While numerous studies have attributed crime to poverty, the major theoretical elaboration of this theme has come from Marxist writers who argue that crime results from the economic exploitation of the working class by the capitalist ruling class. Engels (1969), for example, viewed crime as one response to the brutalization, demoralization and alienation of the working class engendered by capitalist relations of production. More recently, Spitzer has described how capitalism produces an economically redundant population whose marginal status reduces their stake in the capitalist system and who threaten the social relations of production through crime and other forms of deviance (1975:643).

The concept of relative deprivation emphasizes poverty in the midst of wealth or the contrast in the distribution of valued resources as the critical explanatory factor. Merton (1938), who wished to argue against the simple notion that poverty causes crime, claimed that the officially more prevalent rate of lower class crime results from the deprivation of legitimate means relative to the high material success goals of North American society. So while all classes are attracted towards the material success goal, legitimate access to these goals is less readily available to the lower classes and therefore they are more likely to resort to illegitimate means for attaining such goals (Braithwaite, 1979).

After reviewing the relevant research, Braithwaite (1979) concluded that the evidence with respect to the effect of poverty—measured by unemployment or proportion of people below the poverty line—on crime rates is inconsistent. However, he also reported fairly uniform support for a positive association between crime rates and inequality, measured by an index of income dispersion such as the Gini coefficient. Braithwaite's own research supports this conclusion

using average annual crime rates for one hundred ninety three U.S. SMSAs, with controls for population size and region (South vrs. non–South). More recent research (Jacobs, 1981; Blau and Blau, 1982) has also generally supported this relative deprivation interpretation of the effects of inequality on both property and violent crime, though contrary results for homicide are reported by Messner (1982) and by Bailey (1984), who also critiqued Messner's research. Williams (1984) found poverty but not (relative) income inequality to be a positive predictor of the homicide rate, with corrections for nonlinearity. So we will consider whether differences in the economic resources of cities result in higher crime rates, distinguishing between absolute poverty and income dispersion as well as between types of crime.

While the previously reviewed theories all focus upon social structural variables that alledgedly generate higher crime rates, opportunity theory emphasizes the crime–eliciting potential of given circumstances or situations. For example, opportunity theory would argue that certain features of urban settings—the density of potential targets, increased potential for interaction, greater anonymity and ease of transportation to avoid detection, etc.—are particularly conducive to crime.

Cohen and Felson (1979) have maintained that changes in routine activity patterns can influence crime rates by affecting the convergence in space and time of the three minimal elements required for the commission of direct contact, predatory crimes: (1) motivated offenders, (2) suitable targets, and (3) the absence of capable guardians. A major shift in routine activities in North America, noted by these authors, is the dispersion of activities away from the household and of the population across more households due to such historical changes as the increase in the female labor force, the increase in the percentage of the population enrolled in higher education and changes in leisure activity patterns. These changes in routine activities not only create a greater market for movable and portable goods; they also mean that homes and individuals are more vulnerable to victimization. In short, Cohen and Felson (1979) argue that these changes in routine activities increase the opportunity for certain crimes by permitting the criminally motivated to translate their activities into action due to the spatial and temporal organization of these activities.

The situational opportunities for crime are more or less assumed to be a constant in most criminological literature, so there are few studies which examine this relationship. Research on specific crimes against property has

indicated that physical characteristics of dwellings, rhythm of residents' activities and site visibility all affect victimization rates (Pope, 1977; Reppetto, 1974) and that environmental designs and certain community prevention programs decrease target suitability by increasing 'capable guardianship' (Jeffery, 1971; Capone and Nichols, 1976). Furthermore, Choldin and Roncek (1976) reported that the proportion of a city block's households which are primary individual households is consistently one of the best predictors of block crime rates. Cohen and Felson (1979) calculated a measure of dispersal of activities away from the home and, with controls for age composition and unemployment rate, found that this measure of opportunity had a positive effect on changes in the rates of predatory crime from 1947 to 1974. But more recently, Carroll and Jackson (1983) reported that, for ninety-three nonsouthern U.S. cities of over 50,000 population in 1970, the effects of such a dispersal of activities on rates of predatory crime are entirely indirect and transmitted by income inequality. Therefore, we should consider the possible contribution of variation in criminal opportunities, singly and in combination with other variables, to the explanation of urban crime.

Based upon this review of four theoretical perspectives and their respective research, we can specify a number of expected relationships. First of all, we expect only weak support for the urbanization perspective. More specifically, while population size is likely to be directly related to crime rates, particularly for property crime, we do not expect such a relation for density or heterogeneity, net of other predictors. Furthermore, an adequate test of the urbanization hypothesis requires measures of change in urban characteristics or urban growth and, based on the work of Lodhi and Tilly (1973), we do not expect urban growth to affect city crime rates. But following Fischer (1976), we will examine possible indirect effects of urbanization via the population composition of urban areas. We also expect to find positive, direct effects of population composition on both property and violent crime rates. With respect to inequality, we expect strong, positive, direct effects of relative income inequality with at best only weak support for the absolute deprivation or poverty interpretation of income inequality. And while the literature suggests such positive effects of relative deprivation on both property and violent crime, there is some reason to expect stronger effects on property crime rates. Finally, we also expect to find a positive relationship between opportunity and crime but, based on Carroll and Jackson's (1983) recent research, the effect of such opportunity is likely to be indirect and mediated by income inequality. In addition to testing these hypotheses, this research will also permit some assessment of the relative

contribution of these four theoretical perspectives to the explanation of variation in urban crime rates.

III. MEASUREMENT

The dependent variable of crime rates was derived from the records of offenses known to the police as given in Crime and Traffic Enforcement Statistics (Statistics Canada, 1977). Two types of crime were used in the analysis: crimes of violence and crimes against property. The former consisted of murder, attempted murder, manslaughter, rape, other sexual offenses, wounding, assaults (not indecent), and robbery; the latter included breaking and entering, motor vehicle theft, theft over $200, theft under $200, and having stolen goods. While we recognize that using two broad categories may mask important differences for specific offences, it is also likely to increase the reliability of the measurement of crime. Property crimes constituted about 64% of all criminal code offenses during 1977 and crimes of violence approximately 6%. Crime rates were computed with the population base of age ten and over to include only the population at risk of committing crime.

The demographic, social and economic data to measure the several independent variables were obtained from various census materials published by Statistics Canada. The 1976 census data were used in order to allow for a one-year lag with the crime data; the only exception was for the income-related data which were only available from the 1971 census. Three components of urbanization were measured: population size, density and heterogeneity. Population size referred to the total number of individuals living in a community. Density was operationally defined as the population per square mile of land area. Heterogeneity was defined in terms of ethnic composition; and since in the Canadian census ethnic identity is differentiated according to mother tongue, the proportion of minority mother tongue (either non-English or non-French, depending on community location) was the indicator chosen for population heterogeneity. In addition to these static urbanization measures, we also included two indicators of urban growth or change — percentage change in population size and in population heterogeneity from 1971 to 1976. Two measures of population composition were selected: the proportion of the male population age fifteen to twenty-four and the proportion of the population unattached or non-family, measured as the proportion of economically one-person families. Measures of both absolute and relative deprivation were

included to test the inequality perspective. Relative deprivation or income dispersion was measured by the difference between the median income of the population and the average income of the poorest 20% of the population. Absolute deprivation or poverty was indicated separately for the family and non-family populations using the low income levels established by Statistics Canada. For families the low income levels were computed according to the average number of children in a city while for the non-family population the low income level for a one person family was applied universally to all the cities. The unemployment rate was also included as an indicator of absolute deprivation. Finally, the measure of opportunity was the household activity ratio presented by Cohen and Felson (1979) as an estimate of households expected to be most at risk for personal or property crime victimization due to the dispersion of their activities away from family and household and/or their likelihood of owning durable goods of high risk. Specifically, this household activity ratio is the proportion of households occupied by non-family and husband-wife families where the wife is in the labor force.

The unit of analysis was cities in Canada with a population of 25,000 and over. Cities rather than census metropolitan areas were selected since the latter exhibit more internal diversity and are too few for statistical analysis. Since the police jurisdiction by which crime statistics are recorded was not always congruent with census boundaries and some cities share the same police with neighboring communities, the number of cities for which comparable data were available was reduced to eighty-eight.

IV. DATA ANALYSIS

Before proceeding with tests of the hypotheses and an evaluation of the theoretical perspectives, we conducted some preliminary data analysis. Specifically, we inspected the univariate distributions to check for normality and extreme values; we also constructed a correlation matrix to examine the zero-order relationships and possible collinearity. Distributions of a few variables exhibited substantial skewness and/or extreme values requiring data transformations to produce near-normal distributions. Population size was markedly skewed toward the lower values, with approximately two-thirds of cities below 64,500; but the mean was 89,606 and seventeen cities exceeded 100,000 population, but only five were over 400,000. Therefore, we decided to log the city size variable. This produced a more normal distribution with very

similar median and mean values, although there was still some skewing toward the lower values. Population density exhibited a more rectangular distribution, but with one much larger value. So we also transformed this variable into its log and this resulted in a near-normal distribution. The change in population size variable also was quite skewed toward the lower values, with a substantial difference between the mean and median and one quite high value; so it was also transformed into its' log. This reduced the skewness somewhat and brought the mean and median closer together, though some skewness still remained. The distributions of the remaining predictor variables were more normal in shape with no extreme values and thus were not in need of transformation.

The distribution of the violent crime rates was skewed toward the lower values, but two cities had much higher rates and the mean and median values differed substantially. Therefore, we transformed this variable into its' log and this produced a much more normal distribution with very similar mean and median values. The distribution of the property crime rates was more rectangular in shape, with a slight skew toward the lower values, but with one much larger value. So we also transformed this variable into its' log and this produced a somewhat more normal distribution and reduced the range of values. So the hypotheses will be tested using the log of the violent and property crime rates as the dependent variables and the following predictor variables: log of population size, log of density, heterogeneity, log of population change, change in heterogeneity, proportion of the male population that is age fifteen to twenty-four, proportion single, criminal opportunity, unemployment, proportion of low income families and low income individuals, and income inequality.

When the correlation matrix was inspected, three instances of possible collinearity were observed. The proportion of the population that is single was positively correlated (.696) with the measure of criminal opportunity (not surprisingly, given the nature of both measures) and negatively correlated (-.691) with the log of population change; and the proportion of low income families was negatively correlated (-.743) with income inequality. These correlations will have to be kept in mind when we proceed to the multivariate analysis.

The zero order correlations between each predictor variable and the two dependent variables were also examined. The measure of criminal opportunity exhibited the largest correlation with both violent (.561) or property (.656) crime rates. The proportion of the population that is single showed the second highest

correlation with both violent (.490) and property (.504) crime rates. The log of population size was positively correlated with both crime rates (.307 and .396 for violent and property, respectively), while income inequality exhibited a negative correlation with each (-.309 and -.280, respectively), as did the proportion of low income individuals (-.251 and -.336, respectively). The log of population change had a -.235 correlation with violent crime but only -.198 with property crime, while the proportion of young males had a small, negative correlation with violent crime (-.187) and a very weak, negative relationship with property crime (-.109). The measure of heterogeneity, on the other hand, showed a moderately strong positive correlation with property crime (.330) but only a small (.183) correlation with violent crime. The remaining predictors had lower and statistically insignificant correlations with the two dependent variables.

To assess the relative contribution of urbanization, demographic composition , inequality and opportunity perspectives to the explanation of urban violent and property crime rates, we regressed the twelve predictor variables on each of the logged violent and property crime rates. Table 1 shows the results of these regressions. For violent crime, about 47% of the variation is explained by this set of predictors combined. But only two of these predictors contribute significantly to this explained variation.

The proportion of the male population that is age fifteen to twenty-four has the largest effect, net of other predictors; but surprisingly, its' effect is negative. This finding runs counter to our expectations with respect to the direction of the effect of this predictor and we will have to return to a further consideration of it shortly. The predictor with the second largest net effect is criminal opportunity: as the opportunity for crime increases so does the rate of urban violence. None of the remaining variables have statistically significant net effects, although the proportion single, the log of population size and change in , population heterogeneity have small net effects. As proportion single and log of population size increase, so does violent crime; but, contrary to the theory, an increase in population heterogeneity results in a lower violent crime rate. So there is little in these results to support the urbanization thesis, nor is there any evidence for an effect of inequality on violent crime.

Turning to property crime, a slightly larger percentage of its' variation is explained (55%) by the same twelve predictors. However, the only statistically significant net effect is for opportunity: as it increases so does, as expected, the

TABLE 1

Canadian Urban Crime Rates: Decomposition of Effects and Multiple Regression

Dependent Variable	Predetermined Variable	Total Effect	Indirect Effects via Population and Opportunity	Indirect Effects via Poverty and Inequality	Direct Effect
Violent Crime	Population size	.2415*	.0364*	.0215	.1836
	Density	.0418	.1615	-.0113	-.1084
	Heterogeneity	.0473	.1956	-.0036	-.1447
	Population Change	-.1876	-.1135	-.0010	-.0731
	Heterogeneity Change	-.2032	-.0169*	-.0092	-.1771
	Young Male Population	-.3429***	-----	.0099	-.3528**
	Non-family Population	.3045	-----	.0308	.2737
	Opportunity	.3206*	-----	.0273	.2933*
	Low Income Families	.0485	-----	-----	.0485
	Low Income Individuals	-.1100	-----	-----	-.1100
	Unemployment	-.0002	-----	-----	-.0002
	Inequality	-.0323	-----	-----	-.0323
	R^2 = .469 F = 5.54***				
Property Crime	Population size	.2886*	.0990*	.0121	.1775
	Density	.0410	.1584	.0450	-.0724
	Heterogeneity	.1989	.1123	.0008	.0858
	Population Change	-.1334	-.2091	-.0473	.1230
	Heterogeneity Change	-.1269	-.0521	.0273	-.1021
	Young Male Population	-.1139	-----	.0182	-.1321
	Non-family Population	.2509	-----	.0594	.1915
	Opportunity	.4635***	-----	-.0164	.4799***
	Low Income Families	.0623	-----	-----	.0623
	Low Income Individuals	-.1240	-----	-----	-.1240
	Unemployment	.1187	-----	-----	.1187
	Inequality	.0045	-----	-----	.0045
	R^2 = .547 F = 7.56***				

* $p < .05$
** $p < .01$
*** $p < .001$

rate of property crime. The other two variables with small, positive net effects are the log of population size and the proportion single. So again, there is nothing here to support either the urbanization or inequality explanations of urban crime, and at best only meagre support for the population composition perspective.

Several analyses of the residuals for both regressions were executed and the various plots and statistics were examined. These did not reveal any unusual patterns requiring additional analysis. In addition, we also analyzed the residuals from the regression of the twelve predictors on the unlogged violent and property crime rates and compared the results with the residuals from the logged regressions. This comparison of the two sets of residuals revealed a somewhat more normal pattern for the logged regressions, thus confirming our prior decision to transform the two dependent variables into their logs.

It is well known that multiple regression results can be affected by the intercorrelations among predictor variables. Based on the results reported above for both the zero–order correlations and the multiple regressions, we decided to select one indicator only for each of the theoretical perspectives and to repeat the regressions with this smaller set of predictors. Thus the log of the violent crime rate was regressed on the log of population size, the proportion of the male population age fifteen to twenty–four, criminal opportunity and relative deprivation while the log of the property crime rate was regressed on the log of population size, the proportion of the population non–family, criminal opportunity and relative deprivation. For violent crime the four predictors accounted for 39% of the variation. Opportunity had the largest net effect (.4399) and one which was positive in direction. The proportion male and young had a significant but smaller and negative net effect (–.2408), while relative deprivation and population size had smaller and statistically insignificant net effects (–.1885 and .1420, respectively). For property crime, opportunity again had by far the largest net effect (.5262): as opportunity increased so did property crime. Population size had a much smaller, positive net effect (.1749), while the net effects of proportion single and relative deprivation were trivial. Together these four predictors explained 46% of the variation in property crime.

These several regression results emphasize the overwhelming importance of opportunity in the explanation of urban violence and, particularly, property crime. They also confirm our earlier results that showed the absence of any significant contribution of inequality to the explanation of Canadian urban crime

rates. And while proportion male age fifteen to twenty-four and population size had significant net effects on violent and property crime, respectively, these results cannot be said to support the population composition and urbanization perspectives. The direction of the effect of proportion young male is opposite to that expected; and population size is only one component of urbanization, and a static one at that, such that it is difficult to see in this indicator evidence for the alledgedly disorganizing and disruptive consequences of social change.

Several of the hypotheses noted above specified patterns of indirect, along with direct, effects of predictor variables on the dependent variables. In order to test these possibilities path coefficients for a succession of reduced-form regression equations were calculated, and then decomposed into direct and indirect effects (Alwin and Hauser, 1975). The variables were entered in blocks, with the five urbanization variables entered initially, the population composition and opportunity indicators entered on the second step, followed by the indicators of inequality/poverty on the final step. Contrary to the results of Carroll and Jackson (1983), there was no evidence that the effects of opportunity were largely indirect and mediated by the inequality/poverty variables. In fact, virtually all of the effect of opportunity in our data is direct. Furthermore, opportunity exhibited significant and positive total effects on both dependent variables. As for the urbanization variables, the total effect on violent and property crime of the log of population size is significant and positive and remains so with the introduction of the population composition and opportunity variables, though its direct effect in both cases is reduced below the level required for statistical significance. And 34% of its effect on property crime and 15% on violent crime is mediated by the population composition/opportunity variables. But this is hardly evidence for the argument of compositional theory that urbanization has strong indirect effects mediated by the demographic composition of the population.

V. DISCUSSION

These results confirm several, but not all, of our hypotheses. As expected, there is little evidence to support urbanization theory, and particularly its process version, which claims that change in population is disruptive of social relations and therefore criminogenic. Only population size showed any significant effect and, as expected, it was positive: the larger sized cities have higher crime rates, both violent and property. However, this effect of population size, though

somewhat mediated by population /opportunity, is not substantial enough to be significant net of other predictors. But we should note that there is a somewhat restricted variation in the population of the eighty–eight cities: 50% are under 55,000 and only 19% are over 100,000, with only two cities over a population of 500,000. So it could be argued that population size would exhibit a stronger effect with greater variability, particularly with the inclusion of some larger sized cities. Furthermore, the five–year time period used to calculate change in population size and heterogeneity may not be sufficient for measuring the process of urbanization and detecting any of the alledgedly disorganizing effects of such change.

There is some evidence for the direct effect of compositional variables, though it is far from clear–cut and unambiguous. Some indication is present for net effects on both violent and property crime of the proportion of the population of a city that is non–family or single, though the coefficients are not statistically significant. And the proportion of the male population that is between 15 and 24 years of age exhibits a significant net effect on violent but not property crime. However, this effect of age/sex population composition is, contrary to expectations, negative: as the proportion young male increases, violent crime declines. This is a somewhat puzzling result given the research literature which suggests that crime is disproportionately a young, male phenomenon. However, perhaps it results from the different age distributions for violent and property crime. The peak ages for violent crime are somewhat older than those for property crime and thus it could be that a slightly older age category (e.g., 20–30) would be most at risk for violent crime. So it could be that the negative net effect present here is at least partly the product of the particular age category chosen for analysis.

Our results provide strong support for the opportunity thesis that the nature of certain routine activity patterns directly affects the level of crime in cities. Those cities with a greater dispersal of activities away from households contain more opportunities for predatory crime and this gets translated into higher rates of both violent and property offences. What is more surprising is the relative importance of opportunity compared to the other predictors: it shows the only significant net effect on property crime and is one of two significant net predictors of violent crime. These results strongly suggest the theoretical importance of shifting our focus away from an almost exclusive attention to urban features shaping the motivation to commit crime—be they disorganization, poverty or population demography—toward a greater effort to understand the

structure of opportunities for crime or more specifically, the availability of suitable targets for crime in the absence of (informal) guardians capable of preventing the violation.

However, future work along these lines would probably benefit from several extensions to this approach. First, variation in formal guardianship capable of preventing crime should be included in future research and linked to the by now large body of literature concerned with deterrence of crime. Secondly, additional research should attempt to specify some of the conditions under which opportunity is more strongly linked to crime. For example, Jackson (1984) has recently demonstrated that the effect of the dispersion of household activities is a function of city size, having a greater effect on the crime rate in larger cities. Similarly, attention should now be turned to an exploration of other possible interactions between so-called motivational and opportunity variables. In fact, in their statement of the opportunity hypothesis, Cohen and Felson (1979) emphasize the convergence in space and time of motivated offenders, suitable targets and the absence of capable guardians. But the measurement of opportunity in terms of the dispersion of household activities focuses only upon the latter two aspects. So future research should incorporate tests for possible interactions between potential "motivational" factors such as urbanization and inequality on the one hand, and victim proneness on the other (Cantor and Land, 1985). For example, rather than intervening between opportunity and crime, inequality may interact with opportunity to affect the level of crime.

We are surprised by the absence of any significant effect of the income dispersion or relative deprivation variable, particularly with respect to property crime. This could be at least partly the result of using a general property crime index rather than specific categories of property crime since some research, at least, has observed different results for different types of crime (Cohen et al., 1981). In fact, it is possible that effects of inequality on a particular crime may be canceled out when that specific crime is merely one of several that are combined into a more general index. It's also possible that Canadian cities exhibit less income inequality than U.S. cities, or perhaps less variability in income inequality than their U.S. counterparts, particularly given the restricted upper range of population size for cities in this sample and the somewhat greater emphasis upon social welfare and income redistribution in Canada, even though Stack's (1982) results for Sweden failed to support such a welfare effect. Furthermore, Cohen et al. (1981), in their elaboration upon the opportunity model, present results which run counter to some conventional criminological

wisdom in showing that income—not income dispersion—is inversely related to risk of assault, directly related to risk of personal larceny and parabolically related to risk of burglary victimization. But with controls for several risk factors, the affluent had the highest risk of victimization for each of these three crimes. These results suggest that income level rather than income inequality may be the more critical variable since, given similar exposure to risk and lifestyle patterns, the affluent are the most attractive crime targets. So in explaining urban crime rates perhaps future research should focus upon the proportion in the upper income levels, rather than the more traditional focus upon poverty or income inequality. And somewhat similar to our suggestion above concerning interaction between motivational and opportunity factors, Cohen et al. (1981) interpret their results as suggesting that such social power resources as age, income and race relate to criminal victimization only in so far as they are collinear with differences in exposure to risk, guardianship patterns, proximity to potential offenders, and identification of lucrative targets. So perhaps future research attempting to explain urban crime rate variation should follow this lead in focusing upon the combinations and interactions among different types of predictor variables.

REFERENCES

Alwin, D.F. and R.M. Hauser
1975 "The Decomposition of effects in path analysis." American Sociological Review 40:37-47.

Angell, R.C.
1974 "The Moral Integration of American Cities: Part II." American Journal of Sociology 80:607-629.

Avio, K.L. and C.S. Clark
1976 Property Crime in Canada: An Econometric Study. Toronto: University of Toronto Press.

Bailey, W.C.
1984 "Poverty, Inequality, and City Homicide Rates." Criminology 22:531-550.

Blau, J.R. and P.M. Blau
1982 "The Cost of Inequality." American Sociological Review 47:114-129.

Braithwaite, J.B.
1979 Inequality, Crime and Public Policy. London: Routledge and Kegan Paul.

Briar, S. and I. Piliavin
1965 "Delinquency, Situational Inducements and Commitment to Conformity." Social Problems 13:35-45.

Cantor, D. and K.C. Land
1985 "Unemployment and Crime Rates in the Post-World War II United States." American Sociological Review 50:317-332.

Capone, D. and W. Nichols
1976 "Urban Structure and Criminal Mobility." American Behavioral Scientist 20:199-213.

Carroll, L. and P.I. Jackson
1983 "Inequality, Opportunity, and Crime Rates in Central Cities." Criminology 21:178–194.

Choldin, H.M. and D.W. Roncek
1976 "Density, Population Potential and Pathology: A Block-Level Analysis." Public Data Use 4:19–30.

Cohen, L.E. and M. Felson
1979 "Social Change and Crime Rate Trends: A Routine Activity Approach." American Sociological Review 44:588–608.

Cohen, L.E., J.R. Kluegel and K.C. Land
1981 "Social Inequality and Criminal Victimization." American Sociological Review 46:505–524.

Crutchfield, R.D., M.R. Geerken and W.R. Gove
1982 "Crime Rate and Social Integration." Criminology 20:467–478.

Danzieger, S.
1976 "Explaining Urban Crime Rates." Criminology 14:291–95.

Danzieger, S. and D. Wheeler
1975 "Economics of Crime: Punishment or Income Redistribution." Review of Social Economy 33:113–31.

Eberts, P. and K.P. Schwirian
1968 "Metropolitan Crime Rates and Relative Deprivation." Criminologica 5:43–52.

Engels, Frederick
1969 The Condition of the Working Class in England in 1844. Harmondsworth: Penguin.

Fischer, C.S.
1975 "Toward a Subcultural Theory of Urbanism." American Journal of Sociology 80(6):1319–1341.

Fischer, C.S.
1976 The Urban Experience. New York: Harcourt Brace Jovanovich.

Flango, V.E. and E.L. Sherbenou
1976 "Poverty, Urbanization and Crime." Criminology 14:331–46.

Galle, O.R. et al.
1973 "Population Density, Social Structure, and Interpersonal Violence: An Inter-Metropolitan Test of Competing Models." A Paper read to the annual meeting of the American Sociological Association.

Gans, H.
1962 "Urbanism and Suburbanism as Ways of Life," pp. 625–48 in A.M. Rose (ed.) Human Behavior and Social Processes. Boston: Houghton-Mifflin.

Gordon, R.A.
1967 "Issues in the Ecological Study of Delinquency." American Sociological Review 32:927–44.

Gordon, R.A.
1976 "Prevalence: The Rare Datum in Delinquency Measurement and its Implications for the Theory of Delinquency," pp. 201–84 in M. Klein (ed.), The Juvenile Justice System. Beverly Hills: Sage.

Harries, K.D.
1974 The Geography of Crime and Justice. New York: McGraw-Hill.

Harries, K.D.
1976 "A Crime Based Analysis and Classification of 729 American Cities." Social Indicators Research 2:467–87.

Jackson, P.
1984 "Opportunity and Crime." Sociology and Social Research 68:173–193.

Jacobs, David
1981 "Inequality and Economic Crime." Sociology and Social Research 66:12–28.

Jeffery, C.R.
1971 Crime Prevention Through Environmental Design. Beverly Hills: Sage.

Kornhauser, R.
1978 Social Sources of Delinquency. Chicago: University of Chicago Press.

Kvalseth, T.O.
1977 "Note on the Effects of Population Density and Unemployment." Criminology 15:105–110.

Laub, J.H.
1983 "Urbanism, Race and Crime." Journal of Research in Crime and Delinquency 20:183–198.

Lee, G.W.
1984 "Are Crime Rates Increasing?" Canadian Journal of Criminology 26:29–41.

Lodhi, A.Q. and C. Tilly
1973 "Urbanization, Crime, and Collective Violence in 19th-Century France." American Journal of Sociology 79:296–318.

Loftin, C. and R.H. Hill
1974 "Regional Subculture and Homicide: An Examination of The Gastil-Hackney Thesis." American Sociological Review 39:714–24.

Marlin, J.T.
1973 "City Crime: Report of Council on Municipal Performance." Criminal Law Bulletin 9:557–604.

McCarthy, J.D., O.R. Galle and W. Zimmern
1975 "Population Density, Socal Structure, and Interpersonal Violence." American Behavioral Scientist 18:771–89.

Merton, R.K.
1938 "Social Structure and Anomie." American Sociological Review 3:672–82.

Messner, S.F.
1982 "Poverty, Inequality, and the Urban Homicide Rate." Criminology 20:103–114.

Nettler, G.
1978 Explaining Crime. New York: McGraw-Hill.

Pope, C.E.
1977 "Crime-Specific Analysis: The Characteristics of Burglary Incidents." US Dept. of Justice, Law Enforcement Assistance Administration Analytic Report 10.

Reppeto, T.J.
1974 Residential Crime. Cambridge, Mass.: Ballinger.

Roncek, ,D.W.
1975 "Density and Crime: A Methodological Critique." American Behavioral Scientist 18:843–64.

Rowe, A.R. and C.R. Tittle
1977 "Life Cycle Changes and Criminal Propensity." The Sociological Quarterly 18:223–36.

Sagi, P.C. and C.F. Wellford
1968 "Age Composition and Patterns of Change in Criminal Statistics." Journal of Criminal Law, Criminology and Police Science 59:29–36.

Schuessler, K.
1962 "Components of Variation in City Crime Rates." Social Problems 9:314–23.

Schuessler, K. and G. Slatin
1964 "Sources of Variation in US City Crime, 1950 and 1960." Journal of Research in Crime and Delinquency 1:127–48.

Shaw, C.R. and H.D. McKay
1942 Juvenile Delinquency and Urban Areas. Chicago: University of Chicago Press.

Skogan, W.G.
1977 "The Changing Distribution of Big-City Crime: A Multi-City Time-Series Analysis." Urban Affairs Quarterly 13:33-48.

Spector, P.E.
1975 "Population Density and Unemployment: The Effects on the Incidence of Violent Crime in the American City." Criminology 12:399-401.

Spitzer, S.
1975 "Toward a Marxian Theory of Deviance." Social Problems 22:638-651.

Stack, S.
1982 "Social Structure and Swedish Crime Rates." Criminology 20:499-513.

Statistics Canada
1971 1971 Census. Ottawa: Government of Canada.

Statistics Canada
1976 1976 Census. Ottawa: Government of Canada.

Statistics Canada
1977 Crime and Traffic Enforcement Statistics. Ottawa: Government of Canada.

Webb, S.D.
1972 "Crime and the Division of Labor: Testing a Durkheimian Model." American Journal of Sociology 78:643-56.

Wellford, C.F.
1973 "Age Composition and the Increase in Recorded Crime." Criminology 11:61-70.

Wilks, J.A.
1967 "Ecological Correlates of Crime and Delinquency," pp. 138-156 in Task Force Report, Crime and Its Impact. Washington, D.C.: U.S. Government Printing Office.

Williams, K.R.
1984 "Economic Sources of Homicide." American Sociological Review 49:283–289.

Wirth, L.
1938 "Urbanism as a Way of Life." American Journal of Sociology 44:3–24.

Wolfgang, M.E.
1968 "Urban Crime," in J.Q. Wilson, ed., The Metropolitan Enigma. Cambridge: Harvard University Press.

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